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ABSTRACT

Korea's labor market was analyzed to inform efforts to develop a scheme to improve the utilization of vocational qualifications. The study examined the different meanings of qualifications in South Korea's labor market and how utilization of qualifications is influenced by factors such as types of human resource management, vocational training markets, and labor unions. The data collection methods included analysis of labor panel materials, questionnaires, and a case study. The following strategies for promoting usage of vocational qualifications were among those identified: (1) encourage companies to implement an ability-oriented human resources management, to both advance vocational ability and increase productivity; (2) develop a two-track qualification system consisting of corporate qualifications for use in internal labor markets where job function and seniority-oriented human resource management predominate and a nationwide standardized qualification system for the external labor market in which transfer of human resources frequently occurs; (3) promote qualifications of the external market with a focus on the diverse needs of both employees and companies; (5) analyze and evaluate the uses and outcomes of qualifications on a regular basis; and (6) coordinate promotion of qualifications with investment in companies' human resources management and technology policies. (Thirty-one tables/figures are included. The bibliography lists 29 references) (MN)

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A Scheme to Improve the Utilization on Vocational Qualifications in the Labor Market

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A Scheme to Improve the Utilization on Vocational Qualifications in the Labor Market

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I. Introduction

1. The purpose of the study

Qualification indicates an individual ability and knowledge that can carry on specified duties(Gabler Wirtschafts-Lexikon, 1988). Furthermore, according to the 'Basic Act of Qualification', qualification is defined as evaluations by all due standards and processes, a recognizable knowledge and required abilities for the performance of one's duties'. This study focuses on the latter meaning of vocational qualification, which implies a narrower and more specific definition.

The function of an 'vocational qualification' should be to enhance individual economic value, promote job mobility in the labor market, and facilitate the required demands and supplies of human resources for new occupations or businesses (Note: Hereinafter, qualifications means vocational qualifications). In other words, a qualification should require 'transparency' as a signal, representing the values of individual capabilities, a 'currency' that reduces the high cost of training for adaptability and/or a 'flexibility' in the rapidly changing industrial structure.

Furthermore, one's qualifications should be related to his/her career developments, promotions, and the levels of salary because qualification itself ought be an effective means of advancement of vocational abilities. In addition, whether one has the right qualification can be utilized as important information for the effective management of human resources in a company.

OECD regards the recognition of qualification as a procedure of

enhancing an individual's marketability as well as the outcome of one's knowledge and quality through an official process (Shin, Myung-Hoon, et all, 1997). However, the degrees of value endorsing a qualification depend on a variety of norms and customs in a society. For example, Germany places more value on qualifications than other countries in Europe. As a result, German laborers can find better jobs and get paid better wages by acquiring a certificate of a certain qualification. Moreover, laborers who possess the equivalent qualifications can establish occupational organizations for the advancement of their wages and status. With these organizations, they constitute a powerful body of lateral territory in the labor market. On the other hand, in the U. S. and England, the market determines the value of the qualification.

In South Korea, the value of a qualification is considered less than those of academic achievements, thus it is not actively considered in the labor market. However, recently, academic achievements have been used merely as an index of one's performance in the workplace due to the inflation of academic achievements and dramatic technological changes making the labor market more competitive than ever before. Therefore, it is required that qualifications be added on a new form of evaluation thus requiring companies to actively use it. This will raise the value of qualification.

The functions of qualification are, first, to promote lifelong learning and to develop one's vocational ability and, second, to have companies offer incentives for employment, promotions, and wages. However, in South Korea, the status of the qualification has been served mainly when laborers are employed as such, due to the influence of educational training markets; as a result, it has not functioned well as a mechanism for continuously developing one's vocational ability in the workplace. In other words, the status of the qualification is not proportionally related

to rewards in the workplace. Therefore, if the qualification has an index of one's performance in the workplace and can be connected to the standards of wages and promotions, then its roles will be elevated and demand will increase. Hence, the status of the qualification should be related to the system of human resources management (HRM) for the development of individual vocational ability.

The utilization of qualification should increase one's wages, work satisfaction, job stability and employment efficiency. In doing so, the appropriate rewards and treatments should follow according to one's ability (See Figure I-1).

The purpose of this study is to analyze the utilization of the existing qualifications[1] in the labor market. Using the results of the analysis, we can seek ways to develop its diverse usages.

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1) Qualification in this study includes national qualifications, national technical qualifications, private qualifications, and foreign qualifications.

System of Qualification
System of Human Resources Management
Individual's Ability & Achievements
Treatments & Rewards
Planning & Implementing Of Individual Ability

Figure I-1. The relationship between the system of qualification and the system of human resources management

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2. The Contents of the Study

The contents of the study are as follows (See Figure I-2).

First, the study examines the different meanings qualification has in the labor market in South Korea. Second, the system of the qualification is influenced by such factors as the labor market, the types of human resources management, the types of vocational training markets, and the types of labor unions. Thus, this study analyzes how the system of the qualification can be affected by the factors mentioned above. Third, this study investigates the utilization of qualification in South Korea's labor market. For the investigation, this study uses the analysis of labor panel materials, questionnaires, and a case study. Fourth, this study suggests several ways to promote the usages of qualification.

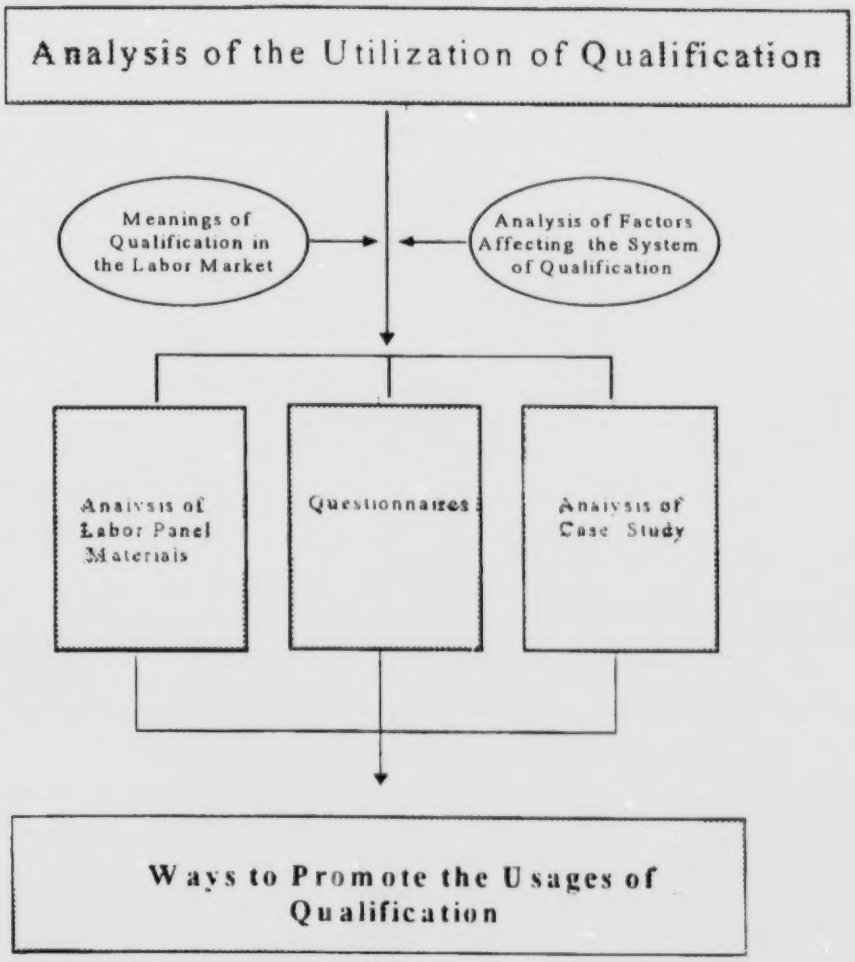
Analysis of the Utilization of Qualification
Meanings of Qualification in the Labor Market
Analysis of Factors Affecting the System of Qualification
Analysis of Labor Panel Materials
Questionnaires
Analysis of Case Study
Ways to Promote the Usages of Qualification

Figure I-2. Research Procedures of the Study

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Ⅱ. The Meanings of Qualification in the Labor Market

1. Individual Level

A qualification evaluates one's job performance. For those who want to be employed, it enables them to gain easier access to the labor market, and for those employed in the workplace, it enables them to acquire job security, work satisfaction, while increasing their wages. According to human resources theories, the value of human beings is elevated by the accumulation of education and training because the investment of education and training that are associated with future income.

As a result, at an individual level, qualification enables individuals to enhance their vocational ability, improve working conditions, promote job security, increase salaries, advance their careers and bring about job satisfaction.

2. Company Level

A 'company' views qualification as one of the main criteria for selecting employees. Furthermore, the function of selecting employees depends on the type of the labor market in a given society. For example, in western societies where a job-base labor market is prevalent, qualifications are widely used because they are directly related to job performance. Thus, qualification plays a relatively important role as an index of one's vocational ability in the workplace and in the industry.

However, in South Korea and Japan where a company-based internal labor market is predominant, qualification serves less as a mechanism to select skilled employees than in western countries. In other words, the selection of employees in South Korea and Japan does not weigh heavily on professional knowledge and performance. Thus the nature of qualification in these societies is not related to specified knowledge or skills, and the labor market shows that generalists rather than specialists are more likely to be hired. As a result, the relationship between human resources management and qualification is weak. Therefore, if human resources management develops in a way that directly ties job performance with wage increase, it will play a more important role in career development as well as personnel management.

3. State Level

A qualification functions as a signal indicating one's vocational ability to both employers and employees in a labor market with little information. Hence, qualification becomes the standard of evaluating human resources and, as a result, reduces the costs of hiring and firing employees, turnover costs and transaction costs. The reduction of such costs leads to efficient economic activities (Lee, Dong-Im, 1997).

Qualification represents the status of one's ability, implies knowledge and skills necessary for the labor market, and indicates the status of the current supply and demand. It even reveals a cause of the imbalance in supply and demand in the labor market. In this vein, qualification can contribute to the development of a new form of evaluation of human resources. This enables the implementation of a more objective and appropriate assessment of one's vocational ability. Recently, many

countries are paying attention to gathering information on human capital and employing it efficiently. In addition, efforts have been made to introduce a new form of assessing human resources in order to enhance the effects of various labor market policies (Uh Soo-Bong, et all, 1999). Therefore, the qualification system is needed as an instrument for evaluating and documenting one's vocational ability and this will help the state, companies, as well as individuals to effectively utilize information for maintaining and developing human capital.

Ⅲ. Factors Affecting the Types of Qualification System

1. Analysis Frames of Influential Factors

A qualification system is affected by the operations of other systems in a given country. Thus, it is necessary to examine what factors have an influence on the types of qualification system[2]. A country's qualification system is affected by its economy, society, corporate culture, and vocational education and trainings. Among them, as shown in Figure Ⅲ-1, the qualification system tends to be more affected by the types of the labor market, the types of human resources management, the types of vocational training, and the types of relationship between labor and capital. In addition, the types of human resources management

2) The types of qualification system are classified as market-led, corporatism, and state-led.

and the relationship between labor and capital are affected by the types of the labor market and vice versa. The types of vocational training are affected by the relationship between labor and capital and visa versa.

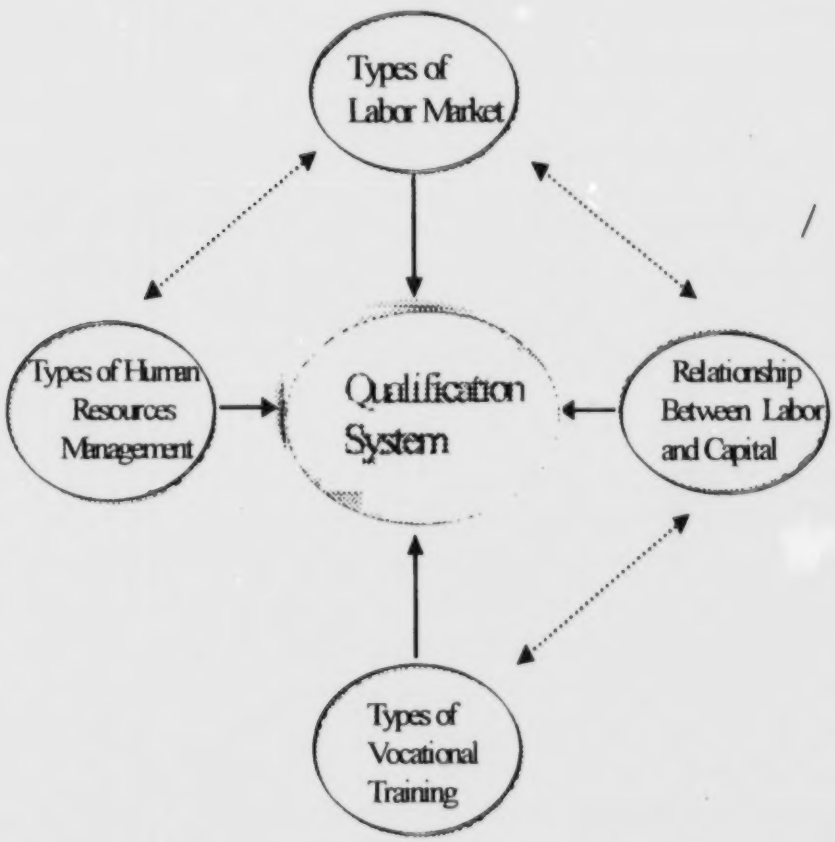
Types of Labor Market
Types of Human Resources Management
Qualification System
Relationship Between Labor and Capital
Types of Vocational Training

Figure III-1. Factors Affecting the Types of Qualification System

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2. Types of the Labor Market

The qualification system plays a significant role in screening human resources. However, the function of the screening depends on the types of the labor market. Depending on whether or not the labor market is open, it is categorized as an external labor market or an internal labor market.

The external labor market is characterized as being open horizontally. That means, the duties of occupations are standardized and the labor market is broken down by the nature of occupations; thus, the supply and demand of human resources are operated by job duties. Such a type of labor market enables laborers to develop their careers by transferring to other positions or other companies. This can be seen in countries in North America and Europe. In such countries, human resources are selected in the external labor market when needed, and they are expelled from the external labor market when demand is low. Thus, the period of employment in a company is relatively short.

Meanwhile, in the internal labor market, it is the duties or positions of occupations in a company that demand human resources. In the same vein, the existing members of the company are suppliers of the positions available. Thus, personnel changes are more likely to come through transfers and promotions within the company. As a result, the commitment of employees to the company is very strong and career developments are conducted by carrying out the different duties within the company. This is common in Confucian countries such as South Korea and Japan.

In the internal labor market mentioned above, personnel changes outside the company are relatively limited due to the expensive turnover costs. Thus, after filling the quota for the lower rung of the ladder,

employees are then transferred, rotated, or promoted within the company. Some quit due to the rotations. However, the majority of employees will climb as far as they can up the ladder and then retire.

In the external labor markets of Western and European countries, qualification is standardized by skill. This is known as the National Skill Standard, because the labor market is structured by job duties. In the case of Germany, influential organizations, classified by occupation, grant qualifications to individuals. Thus, qualification is widely used as an index of one's vocational ability in relevant occupational sectors. In addition, the nationally standardized vocational training and evaluation are related to the current demands of the labor market.

In countries that have internal labor markets, the specificity and nature of expertise promote the internal labor market. Skills and specialized knowledge needed for jobs are passed down directly from predecessors, rather than implementing standardized vocational training (Bae Moo-Ki, 1994). Thus, in countries where the internal labor market has existed for a long time, the qualification granted by a company a corporate qualification becomes important because employees are assigned specified duties related to training and promotions provided by the company; as a result, qualification functions as a mechanism to evaluate the specified duties of employees.

3. Types of Human Resources Management

Both types and functions of qualification depend on the types of human resources management. In other words, skills supplied to the labor market vary in relation to the kinds of personnel that are recruited and selected. In addition, the incentive to develop one's vocational ability

differs in accordance with promotions and wages. Therefore, it can be argued that qualification depends on the types of human resources management.

The types of human resources management are usually categorized as job duty-oriented, seniority-oriented, and job function-oriented.

In job duty-oriented human resources management, employees are recruited on the criteria of job performance. Wages are determined by the value of the job performance granted by the labor market. The job duty-oriented human resources management is a system in which control of job performance within a promotion path is established. This is generally employed in Western countries where the external labor market is developed.

In seniority-oriented human resources management, the system is hierarchical in nature, defined by the number of years employed as well as the experience of the employees. This is generally employed in eastern Asian countries where the family, collectivism, community-oriented society and the internal labor market are developed.

Job function-oriented human resources management is characterized as something between job duty-oriented and seniority-oriented human resources management. This management style grants lifetime income security according to the years of service of employees and guarantees rewards according to the value of job duties. In other words, this is an ability-oriented human resources management and, in Japan, it is called a job-function oriented qualification system. Wages and employment are important factors of the job-function oriented human resources management.

Wages cost employers but they are also sources of income for employees. Thus, appropriate levels of income are important because they enhance the laborer's vocational ability and productivity. The system of

wages can also be categorized into job duty-related, seniority-related, and job function-related systems. In the job duty-related wages system, the levels of income are determined by evaluations of job duties. In other words, wages reflect the amount of labor in the job-duty related wages system. It takes into consideration the significance, degrees of difficulty, and responsibility of jobs.

In the seniority-related wages system, the levels of income are determined by academic achievements and years and experiences that employees have accumulated in a company. In this system, the number of years of employment is considered the most important factor in setting the levels of income, followed by job performance evaluations.

In the job function-related wages system, the levels of income are determined by individual job performance. The system is divided into two tracksone guaranteed for the promotion of a position and the other guaranteed for salary increases. Thus, laborers are deemed qualified and promoted for a position on the basis of their vocational ability - not academic achievements. It offers more opportunities to employees. It also contributes to the formation of an amicable community made up of both employers and employees.

The job duty-oriented recruitment system differs in various ways from that of job-function and seniority-oriented systems. Experienced employees are more likely to be hired in the job duty-oriented recruitment system because it is based on the flexibility of the labor market. Meanwhile, novices tend to be hired in the job function-oriented or the seniority-oriented recruitment systems, then a company provides them with vocational education and training.

Again, the types of human resources management affecting the qualification system are: 1) job duty-oriented, 2) job function-oriented, and 3) seniority-oriented. In job duty-oriented human resources

management, specialists are usually hired for designated job duties and their wages are determined by their job achievements. As a result, the role of qualification in the labor market is usually considered important for employment. However, in the cases of job function-oriented and seniority-oriented human resources management, generalists are usually hired, and as mentioned above, the company provides them with relevant vocational education and training; thus, the qualification granted by the individual company is usually considered more important.

Table Ⅲ-1. Types of Human Resources Management and Qualification Systems

Classified	Job Duty Oriented	Job Function & Seniority-Oriented
Employment	Employed by Job Duty Specialist Hired	Employed by Occupation, Academic Achievement, & Generalist Hired
Wages	Job Duty Related	Job Function & Seniority Related
Qualification Systems	Standardized Qualifications in the Labor Market	In-firm Qualifications

4. Types of Vocational Training

In a traditional industrial society, large amounts of labor and capital produced 'value added' resources. However, now, human capital and knowledge produce 'value added' resources. As a result, the survival of a

company depends on how human capital is secured, maintained and developed. Vocational education training, an important instrument to secure and develop human resources, are categorized into private-led and state-led.

Private-led vocational training is again divided into two, a market type and corporatism type. The former is generally employed in the U. S. and England, and the latter in Germany and France, where labor unions and industrial organizations are more concerned about vocational training. Thus, training is provided according to the demands of an industry.

In a country in which the market type of vocational training is operated, training tends to fail due to under-investment such as in the case of laissez-faire economy. However, if a government has too much control over the economic market, other failures can ensue. In order to prevent these failures and to produce public property, the governments of the U.S and England have introduced the certification system of human resources development for the vocational development of employees currently working in companies. Meanwhile, in Germany where the corporatism type of vocational training is mainly employed, companies are constantly investing in the training of highly skilled workers in order to meet the strategies of manufacturers producing high value added goods. German manufacturers have developed unique human resource policies and skills to maintain the production of high value added goods. In other words, certifications of skill are required for employment, transfers, and promotions, which guarantees a high level of employment. Wages are determined by general agreements set by the relevant communities; thus, companies can reduce the costs of vocational training. It also prevents the offering of higher wages to skilled workers of rival companies (Chung Ju-Yon, 1997).

South Korea is a typical example of the state-led vocational training

market. The vocational training of South Korea has, for a long time, focused mainly on supply - which allows the easy operation of training - rather than demand, which requires an accurate understanding of the need for vocational training. The qualification system has been mostly used as a ticket to an initial entrance into the labor market; thus, the qualifications of employees currently working were not developed. As such, qualification's relationship to wage was weak in the labor market. Therefore, it is necessary to construct fair evaluations of vocational training and their equivalent reward systems.

Companies should promote the advancement of human resources for the accumulation of knowledge capital, by efficiently developing an internal labor market with an emphasis on increasing employment possibilities and improving marketability. This will lead to an increase in the importance of qualification for workers. In state-led vocational training, the state directly implements vocational training; thus, the functions of private-led vocational training centers are weak. In such vocational training, trainings on basic education to novices, not training for the advancement of vocational skills, are mainly conducted. Whether in the market type or corporatism type, private-led vocational training may make it possible for training to be implemented according to the needs of the labor market. In Germany, as mentioned above, labor unions and representatives of each sector conduct vocational training; thus it ensures the advancement of vocational skills. In the U. S. and England both of the market types training for the advancement of vocational skills are reinforced and human resources is induced to prevent failure in the labor market. Hence, in South Korea, private-led vocational training needs to expand to activate the advancement of vocational skills and to make verification of qualification more available.

5. Types of Industrial Relations

As mentioned above, the type of labor market determines how the qualification functions. The types of the labor market and recurrent affects of the core value of the qualification indirectly affect the relationship between labor and capital.

In the external labor market, the labor market is organized with priority to job duty, thus making it easy for the relationship between labor and capital to be established by businesses and occupations. However, in the internal labor market, the labor market is organized with priority to a company; thus, the relationship between labor and capital is also determined by the company. The labor unions of Europe are organized by business and by occupation. However, individual companies organize labor unions in South Korea and Japan. The types of relationship between labor and capital are categorized as the corporatism type[3] and decentralized type.

The qualification systems in German are closely related to the corporatism type of relationship between labor and capital. The labor unions regulate vocational training of industries as well as of the state with help from companies; thus, labor and capital make cooperative decisions on such matters as employment and wages. This is because the labor unions of Germany are operated as a center of human resources. As such, labor unions and organizations are partners in collective bargaining operated by their relevant occupations.

In Germany, both labor and capital emphasize the development of

3) The way of collective bargaining is centralized, thus its effect of the results of the bargaining is far-reaching. The main body of the collective bargaining takes into consideration the status of national economy when making a decision.

human resources. They view quality and long-term development of human resources as important factors that contribute to national competitive power. Especially, the labor unions of Germany participate, as an equal partner, in the decision-making processes of each company and organization, which includes planning and operating vocational education training, assessing the qualification system, and evaluating vocational training. The procedures contribute to secure competitive economic power and social stability in Germany.

Meanwhile, in the decentralized type, a collective bargaining is conducted at the company level. The nature of the relationship between labor and capital in Japan is similar to that in Korea. Individual companies organize labor unions and collective bargaining is conducted at the company level. Japanese companies implement vocational training with policies and practices indicating that human resources can be located within the companies. In other words, on-the-job training functions as the main measure for vocational training and it still plays an important role today. However, the advanced levels of labor unions in Japan are less likely to participate in vocational training. Furthermore, the biggest issue for labor unions is job performance. Even though the labor unions participate in an economic council led by the government, they have little voice on matters concerned. Moreover, their participation in vocational training at the company level as well as the industrial level are insignificant. This is because the labor unions in Japan are not organized by occupations like those in Europe (Choi Young-Ho, et all, 1999).

The relationship between labor and capital in the U. S. is unique, among Western countries, in the relationship is maintained by each company and collective bargaining is conducted at the company level. An example of this would be 'Taylorism' scientific management that has

had a great influence on business minds and practices in the U. S. in the past. The geographic factor, the U.S. being so vast and home to many different ethnic and cultural groups have also had an impact on the formation of the relationship between labor and capital. In addition, the decentralized relationship between labor and capital in the U.S. comes from the fact that the unions focus primarily on wages and the work hours of employees. Therefore, individuals and companies rather than the labor unions are responsible for the development of vocational training.

In countries where the emphasis on qualification is great, both labor and capital take a larger interest in the qualification system, and the relationship between labor and capital is established by businesses and occupations, not by companies. Thus, collective bargaining is conducted at the business level. The relationship between labor and capital in the U.S. and England is formed at the company level and in Japan it is also decentralized; however, the relationship between labor and capital in German is more of the corporatism type.

The relationship between labor and capital in South Korea has long been built at the company level. Thus, the representatives of labor unions in South Korea have had no voice in business decision-making due to the familial environment. Furthermore, the labor unions do not play a role in the operations of the qualification system and labor's development of vocational ability because the government has traditionally been in control. In addition, the main partner in collective bargaining is a company's labor union; therefore, the participation of the labor union in the operations of the qualification system at the level of trans-corporations is limited.

6. Conclusion

This study examined thus far the factors affecting the types of qualification system: 1) types of the labor market; 2) types of human resources management; 3) types of vocational training; and 4) types of the relationship between labor and capital. The types of the qualification system of each country are classified as shown in Figure Ⅲ-2, with the degrees of externalization that includes the types of the labor market and the types of human resource management, and the degrees of corporatism that includes the types of vocational trainings and the types of the relationship between labor and capital. In the U.S. and England, the degrees of externalization are high; however, those of corporatism are low. In Germany, the degrees of both externalization and corporatism are high while in South Korea and Japan, the degrees of both externalization and corporatism are low. In France, like Germany, the degrees of corporatism are high, but externalization is low because the internal labor market is developed.

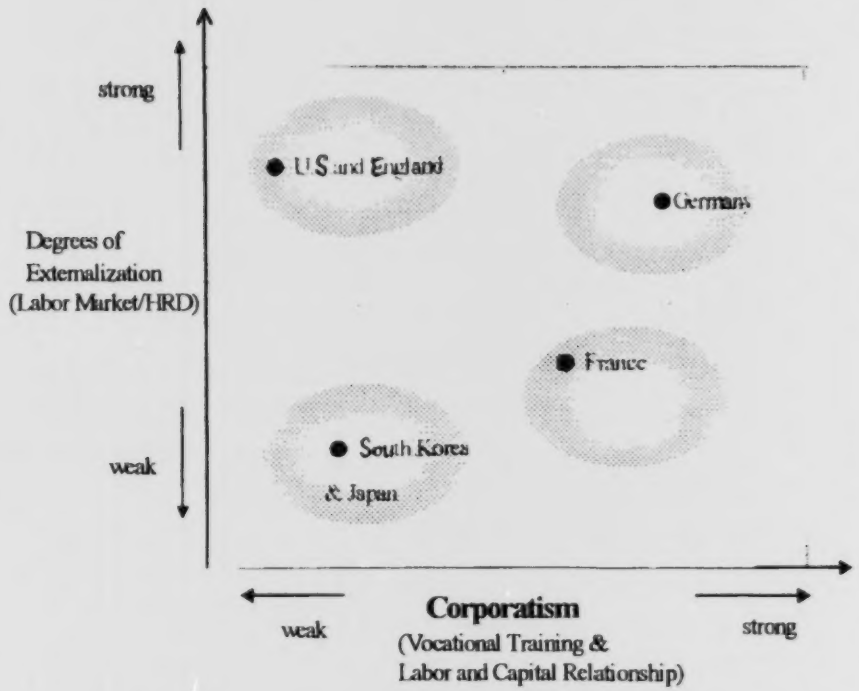

Figure Ⅲ-2. Countries by the Degrees of Externalization & Corporatism

In South Korea and Japan, the activation of a corporation's qualification system is very useful in the development of human resources because the degrees of internalization in the labor market are traditionally high. If a standardized qualification system operated by a job duty system is established in South Korea like the U.S. and England, the efficiency of the system may not be as great because of the strong internalization in the labor market. However, it will be effective if the standardized qualification system is conducted in occupations in which the degrees of externalization in the labor market are high. To be more effective, the system of human resources

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management needs to change into a job duty-oriented one.

This requires reforms in South Korea's qualification system. It requires that the current system change into a job duty-oriented system in order to increase the usages of qualification and to advance social rewards for those who earn such qualifications. It also requires regular investigations of the evaluation standards of the qualification system to meet the needs of the labor market. In addition, a stable relationship between labor and capital should be established and this will make companies interested in human resources management produce more value added goods. Companies should also pay attention to the development of human resources for the advancement of vocational abilities and an enhancement of rewards for skilled workers, with the conception that vocational training is public property. In conclusion, labor unions organized by each business can function more efficiently for the operation of the qualification system; thus, an effort should be made in developing this kind of labor union.

Ⅳ. Analysis of the Degrees of Usage of Qualifications

1. Analysis Frame of the Degrees of Usage

In this study, three ways of analysis of the degrees of usages of qualifications were utilized. First, the study estimated the degrees of job satisfaction of those with qualifications, transfer trends, employment

effects, and wage effects through labor and income panel data. Second, with this data, questionnaires were administered to examine the utilization of the qualifications in the development of human resources. Third, an in-depth analysis of the operations of in-firm qualification system and its differentiations from other qualification systems were conducted through the investigation of the operations of in-firm qualification systems recognized by the Ministry of Labor.

2. Analysis of the Labor and Income Panel Data

1) Characteristics of the Labor and Income Panel Data

This study utilized the Korean labor and income panel data that was collected since 1998, by the Korea Labor Research Institute, in order to analyze the accomplishments and the degrees of usage of qualifications. The panel data is a longitudinal survey of economic activities, transfers in the labor market, income activities, consumptions, education, vocational training, and social activities of members of 5,000 households living in non-rural areas of South Korea. The survey is conducted once a year.

Besides information on individual geographic data and economic activities such as the types of employment, working hours, and types of occupations, the Korean labor and income panel data also included information on job satisfaction and the reasons for quitting or transferring jobs. Currently, the third panel data in 2000 by Korea Labor Research Institute is not available; thus, this study analyzed the second panel data released in 1999. In the first panel data in 1998, no information on qualifications was available[4]. Furthermore, questions on

the degree of job satisfaction and reasons for transfers were not clearly discriminated or there were no questions addressing these issues.

One of the main purposes of this study was to examine how qualification affected job satisfaction and the decision to transfer; thus, only waged employees were used as samples for the analysis of levels of salaries and both waged and non-waged employees as samples for the analysis of employment effects.

2) Analysis of Basic Statistics

Table Ⅳ-1 indicates the values of basic statistics for each variable used in the study. The sample numbers of both waged and non-waged employees were 12,042, and 9.4% of them possessed qualifications[5]. The sample numbers of waged employees were 3,765, and 15.4% of them possessed qualifications.[6] Table IV-1 also indicates an occupation dummy by job classification and a business dummy by industry classification as well as an education dummy by academic achievement.

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4) This study analyzed information on qualification of 1999 for the analysis of its status of 1998, which mostly includes employees' mobility. Besides, most information on qualification drew from the panel data collected in 1999.

5) The numbers of those with qualifications of any kinds in the panel data are 2310 (19% of the total samples). The percentage of those with qualification investigated in this study is 9.4.

6) In the second panel data, those with six qualifications are included but this study focused on one of many qualifications by one person.

Table Ⅳ-1. Basic Statistics on the Analysis of the Labor and Income Panel Data

Items	Waged and Non-waged Employees (N=12,042)		Waged Employees (N=3,765))	
	Average	SD	Average	SD
Paid job (dpaid=1)	0.230	(0.421)	0.735	(0.442)
Intention to transfer (dquit)	0.053	(0.225)	0.099	(0.298)
Wages (lnwage)	4.480	(0.690)	4.463	(0.630)
Degrees of job satisfaction (msaf)	2.976	(0.368)	2.972	(0.553)
Gender (dsex: male=1)	0.482	(0.500)	0.600	(0.490)
Marital status (dmarr: married=1)	0.632	(0.482)	0.681	(0.466)
Age (age)	39.993	(16.583)	37.587	(11.423)
Square of age (agesq)	1874.360	(1498.770)	1543.260	(933.987)
Years of education (yedu)	10.717	(4.255)	11.895	(3.613)
Square of year of ed. (yedsq)	132.955	(77.839)	154.543	(76.801)
Years of Employment (ytenu)	6.927	(9.869)	5.447	(7.007)
Square of year of em. (ytenusq)	1.454	(3.943)	0.787	(1.874)
Possession of qualification (dskill: poss. of qual=1)	0.094	(0.291)	0.154	(0.361)
Vocational Training (dtrain: training=1)	0.019	(0.135)	0.033	(0.180)
National skills qualification (dwho1)	0.095	(0.294)	0.133	(0.340)
National qualification (dwho2)	0.042	(0.201)	0.061	(0.239)
Private qualification (dwho3)	0.020	(0.139)	0.029	(0.167)
Other qualification (dwho4)	0.005	(0.074)	0.009	(0.096)
Labor union (dunion: union=1)	0.065	(0.246)	0.198	(0.399)
Full time (fp: full time=1)	0.461	(0.499)	0.918	(0.274)
Household income (hinc)	455.036	(1361.280)	395.859	(1156.530)
Number of household (hnob)	4.021	(1.344)	3.946	(1.287)
Appropriateness of job duty and academic achievements (sedu)	1.792	(0.432)	1.772	(0.447)
levels of skills (mski)	1.807	(0.420)	1.786	(0.434)

Note: Items such as DEDU (education), DIND (industry), DSIZE (size of companies), DOCC (occupation) are not included

3) Effects of Qualifications on the Decision to Transfer

(1) Effects of Qualifications on the Decision to Transfer

Table Ⅳ-2 shows employees' decisions to transfer, depending on whether they possess qualifications. The high percentages of transfers among those who possess qualifications can be found. Of those who responded to such questions as 'I want to quit' and 'I want to transfer', there is a 3% difference between those who possess qualification and those who do not.

Table Ⅳ-2. Decision to Transfer by Qualification

(Unit: persons, %)

Items	Qualification	No qualification	Total
Want to stay at the same workplace	891(81.8)	2,181(81.5)	3,072(81.6)
Want more work at the same workplace	50(4.6)	210(7.9)	260(6.9)
Want to quit	35(3.2)	104(3.9)	139(3.7)
Want additional work at current job	26(2.4)	34(1.3)	60(1.6)
Want to transfer	87(8.0)	146(5.5)	233(6.2)
Total	1,089(100.0)	2,675(100.0)	3,764(100.0)

If the percentage of the decision to transfer among waged employees is analyzed by the types of qualification, as a whole 40-50% of them want to transfer. However, it is revealed that those who possess national qualifications are more likely to transfer than those who possess private qualifications and national skill-type qualifications.

Table Ⅳ-3. Percentage of Intention to Transfer of Waged Employees by Types of Qualification

(Unit: persons, %)

Types	National skill	National	Private	Others	Total
Total	501(44.0)	538(49.9)	24(47.1)	26(63.4)	1089(47.1)

Note: Percentage of Intention to transfer: (numbers of those with each category of qualification / total numbers of those with qualifications) x 100

(2) Determinant Factors Affecting the Decision to Transfer

Table Ⅳ-4 indicates estimated determinant factors affecting the decision to transfer through a Binominal Logit analysis. As mentioned above, a dependant variable of this study is 'an intention to transfer'. In the Logit analysis, only waged employees who responded to two questions 'I want to quit' and 'I want to transfer' were utilized as samples. Of the respondents, 9.9% had the intention to transfer at the time this research was conducted in 1999. In the Logit analysis, 1 indicates the intention to transfer and 0 - no-intention to transfer.

Table Ⅳ-4. Determinant Factors Affecting the Decision to Transfer

Variables	Estimated coefficients	SD
Constant	2.125	(0.494)***
Possession of qualification (dskill: poss. of qual=1)	0.457	(0.160)***
Wages (lnwage)	-0.128	(0.124)
Age (age)	-0.024	(0.007)***
Paid job (dpaid=1)	-0.374	(0.144)***
Appropriateness of job duty and academic achievements (sedu)	-0.891	(0.248)***
Appropriateness of job duty and the levels of skills (mski)	-0.752	(0.246)***
Gender (dsex: male=1)	-0.009	(0.131)
Marital status (dmarr: married=1)	0.044	(0.146)
Full time (fp: full time=1)	-0.233	(0.205)
High school graduate (dedu3)	0.272	(0.179)
Junior college graduate (dedu4)	0.392	(0.251)
College graduate (edeu5)	0.291	(0.212)
Size of company (dsize3)	0.494	(0.215)***
Size of company (dsize4)	0.205	(0.345)
Size of company (dsize5)	-0.099	(0.198)
Labor union (dunion: union=1)	-0.881	(0.216)***
Sample numbers		3,729
-(Log, maximum level)		-1034.51

Note: *** p<.01, ** p<.05, * p<.1

In this study, explanatory variables include the possession of qualifications, employment status, levels of income, company size, participation in labor unions, and personal characteristics such as age, gender, academic achievements, and marital status. A variable on the appropriateness of what employees are currently doing in a company and their academic achievements (sedu) and the levels of skills (mski) were also included.[7]

In the study, the possession dummy reveals a positive significance; meanwhile, the dummies of age, paid job academic achievements, the levels skills and labor unions reveal a negative significance. Thus, it is suggested that those who possess qualifications are more likely to transfer than those who do not. It is also suggested that the older employees are and the longer they are employed, the less they will be inclined to transfer.

4) Degrees of Job Satisfaction by Qualification

(1) Degrees of Job Satisfaction by the Status and Types of Qualifications

The variable of the degrees of job satisfaction includes nine items: income, job security, job duty, work environment, working hours, one's development of potential vocational ability, communication skills and relationships with others, fairness of personnel changes, and welfare for employees. Each item was measured on a Likert five-point response scale.

The results of the analysis reveal that the item indicating highest degrees of job satisfaction is 'communication skills and a relationship

7) It consists of a three point Likert scales. The high points indicate the high level of job duty for employees' academic achievements and the level of their skills.

with others', as shown in Table IV-5. The items of 'job duty' and 'work environment' also indicate relatively high degrees of job satisfaction.

Furthermore, it is revealed that those who possess qualifications are more satisfied with what they are currently doing on the job than those who do not.

Table IV-5. Degrees of Job Duty Satisfactions by the Possession of Qualifications

Items	Qualification	No qualification	Total
Income	2.63	2.57	2.58
Job security	3.15	2.87	2.95
Job duty	3.37	3.16	3.22
Work environment	3.14	3.05	3.08
Working hours	3.11	3.02	3.05
Potential vocational development	2.98	2.83	2.87
Communication skills	3.56	3.35	3.41
Fairness of personnel changes	2.98	2.88	2.91
Welfare	2.81	2.62	2.67
Total	3.69	2.93	3.31

Table Ⅳ-6 indicates the results of the degrees of job satisfaction by the types of qualification. In this analysis, it is evident that those with private qualifications (3.17) are more satisfied with their job than those with national technical qualifications (3.09) and national qualifications (3.06).

Table Ⅳ-6. Degrees of Job Satisfaction by Types of Qualifications

Types	National technical	National	Private	Others	Total
Total	3.09	3.06	3.17	3.17	3.08

(2) Determinant Factors Affecting the Degrees of Job Satisfaction

Table Ⅳ-7 indicates the estimated determinant factors affecting the degrees of job satisfaction through OLS. In this analysis, a dependent variable, 'the degrees of job satisfaction', includes employees' personal characteristics, wages, and types of employment, and an explanatory variable includes the sizes of business and industry.

It is revealed in the analysis that the possession of qualifications has a positive relationship with the degree of job satisfaction. In other words, those who possess qualifications are more likely to be satisfied with their wages, work environments and job security. It is suggested that such satisfactions result from their higher productivity and better job performances.

It is also found that the degree of job satisfaction of employees is high if they are paid higher wages, have a paid job, and experience a connection between what they are doing and their academic achievements. Furthermore, job satisfaction is also high if employees are

women, and are not married. These results meet a general expectation in regard to employees' job satisfaction.

As shown in Table Ⅳ-6 and Table Ⅳ-7, those who possess qualifications are more likely to transfer, even though they are satisfied with their jobs. In other words, those who possess qualifications are more content with their job performances and have more job opportunities than those who do not.

Table IV-7. Determinant Factors Affecting the Degrees of Job Satisfaction

Variables	Estimated coefficients	SD
Constant	1.587	(0.099)***
Possession of qualification (dskill: poss. of qual=1)	0.047	(0.022)**
Wages (lnwage)	0.177	(0.018)***
Paid job (dpaid=1)	0.158	(0.021)***
Appropriateness of job duty and academic achievements (sedu)	0.267	(0.034)***
Appropriateness of job duty and the levels of skills (mski)	0.091	(0.034)***
Gender (dsex: male=1)	-0.110	(0.019)***
Marital status (dmarr: married=1)	-0.042	(0.019)**
Age (age)	0.000	(0.001)
High school graduate (dedu3)	0.091	(0.023)***
Junior college graduate (dedu4)	0.119	(0.035)***
College graduate (edeu5)	0.166	(0.031)***
Size of company (dsize3)	-0.021	(0.029)
Size of company (dsize4)	0.053	(0.041)
Size of company (dsize5)	0.075	(0.023)***
Labor union (dunion: union=1)	0.040	(0.023)*
Full time (fp: full time=1)	-0.200	(0.031)***
Industry (dind2)	0.103	(0.061)*
Industry (dind4)	-0.064	(0.064)
Industry (dind5)	0.077	(0.064)
Industry (dind6)	-0.031	(0.070)
Industry (dind7)	-0.026	(0.066)
Industry (dind8	0.134	(0.068)*
Industry (dind9)	0.118	(0.060)*
Occupation (docc2)	-0.006	(0.062)
Occupation (docc3)	-0.001	(0.058)
Occupation (docc4)	0.020	(0.058)
Occupation (docc5)	-0.086	(0.061)
Occupation (docc7)	-0.115	(0.059)**
Occupation (docc8)	-0.167	(0.059)***
Occupation (docc9)	-0.138	(0.059)*
Adjusted R	0.336	
Sample numbers	3,729	
F ratio	63.85***	

Note: *** p<.01, ** p<.05, * p<.1

5) Effects of Qualification on the Transfer in Employment Status

(1) Effects of Qualification on the Transfer in Employment Status

Table Ⅳ-8 indicates the results of an analysis of the transfer rates in employment status of both those with qualifications and those without. The analysis was conducted from 1998 to 1999 to examine the effects of qualification on transfer in the workplace.

Table Ⅳ-8. Effects of Qualification on the Transfer in Employment Status

(Unit: persons, %)

Classified		Type of employment	1999			
			Full-time	Part-time	Daily-based	Total
1998	Those with qualification	Full-time	733(97.1)	14(1.9)	8(1.1)	755(100.0)
		Part-time	20(39.2)	29(56.9)	2(3.9)	51(100.0)
		Daily-based	6(19.4)	2(5.1)	23(74.2)	31(100.0)
		Total	759(90.7)	45(5.4)	33(3.9)	837(100.0)
	Those without qualification	Full-time	1,458(94.4)	52(3.4)	34(2.2)	1,544(100.0)
		Part-time	37(21.8)	121(71.2)	12(7.1)	170(100.0)
		Daily-based	25(12.1)	17(8.2)	165(79.7)	207(100.0)
		Total	1520(79.1)	190(9.9)	211(11.0)	1,921(100.0)

Of the respondents who were part-time workers with qualifications in 1998, employment status of 39% was upgraded to full-time in 1999 as opposed to 22% of those who did not possess any qualification becoming full-time workers. It is more likely that those with

qualifications will transfer even within part time jobs than those without. The percentage of each is 79% and 57%, respectively. In the case of a transfer from a part-time job to a daily-based job, it is evident that the employment status of those without any qualifications is more likely to be downgraded than that of those with qualifications (7% and 4%, respectively).

Of those with qualifications who worked on a daily basis in 1998, 19% of them found themselves in full-time positions in 1999, as opposed to the 12% without.

As such, differences can be found between those with qualifications and those without in transfers in job positions and occupations. Thus it can be argued that qualification definitely affects the upward social mobility of workers.

(2) Effects of Qualification on Employment

An analysis of whether qualification functions as an effective instrument that enables the unemployed to enter the labor market and how much qualification affects employee transfer, is needed.

Table Ⅳ-9 indicates the results of the economic activities of both the unemployed and the employed analyzed by Binominal Logit. The statistics reveal that those with qualifications are more likely to be employed than those without. The older they are and the more training they receive, the more likely they will be employed. Furthermore, men tend to be hired more than women.

Table Ⅳ-9. Determinant Model on Employment by Binominal Logit Analysis

Variables	Estimated coefficients	SD
Constant	-7.071	(0.215)***
Possession of qualification (dskill: poss. of qual=1)	0.563	(0.076)***
Vocational training (dtrain=1)	0.475	(0.162)***
Gender (dsex:male=1)	0.999	(0.044)***
Marital status (dmarr:married=1)	-0.143	(0.061)**
Age (age)	0.368	(0.010)***
Square of age (agesq)	-0.004	(0.000)***
High school graduate (dedu3)	-0.121	(0.059)**
Junior college graduate (dedu4)	0.140	(0.097)
College graduate (edeu5)	-0.168	(0.071)**
Number of household (hnob)	-0.078	(0.016)***
Household income (hinc)	0.000	(0.000)***
Numbers of sample	12,042	
-(Log, maximum level)	-6665.894	

Note: 1) *** p<.01, ** p<.05, * p<.1
2) a = employed, b = unemployed

Table Ⅳ-10 indicates the results of estimated coefficients that represent the probability of employment of both waged workers and non-waged workers (self-employed included).

The first model (Logit (a/c)) explaining the probability of the unemployed becoming waged workers reveals that those with

qualifications are more likely to be hired as waged employees rather than those without. The same results have been obtained from the second model (Logit (b/c)) explaining the probability of the unemployed becoming non-waged workers. In the two models, it is revealed that the effects of qualification on employment are statistically significant; in other words, qualification has a positive effect on employment. Meanwhile, it is indicated that the effects of vocational training on employment are not statistically significant, contrary to the results of binominal Logit analysis.

Judging from the results of the two models, qualification is regarded as a strong asset to employment; thus, it is suggested that obtaining qualification is an important instrument for the unemployed to be able to enter the labor market.

Table Ⅳ-10. Determinant Model on Employment by Multinomial Logit Analysis

Variables	Logit(a/c)		Logit(b/c)	
	Estimated coefficients	SD	Estimated coefficients	SD
Constant	-7.279	(0.245)***	-10.460	(0.353)***
Possession of qualification (dskill: poss. of qual=1)	0.644	(0.078)***	0.328	(0.108)***
Vocational training (dtrain=1)	0.608	(0.165)	-0.081	(0.255)
Gender (dsex:male=1)	0.967	(0.048)***	1.022	(0.058)***
Marital status (dmarr:married=1)	-0.354	(0.067)***	0.325	(0.087)***
Age (age)	0.381	(0.012)***	0.434	(0.016)***
Square of age (agesq)	-0.005	(0.000)***	-0.005	(0.000)***
High school graduate (dedu3)	-0.083	(0.067)***	-0.114	(0.072)
Junior college graduate (dedu4)	0.220	(0.103)	0.006	(0.139)
College graduate (edeu5)	-0.013	(0.078)***	-0.522	(0.098)***
Number of household (hnob)	-0.089	(0.018)***	-0.073	(0.022)***
Household income (hinc)	0.000	(0.000)***	0.000	(0.000)***
Number of samples	12,042			
-(Log, maximum level)	-10150.47			

Note: 1) *** p<.01, ** p<.05, * p<.1

2) a = waged workers, b = non-waged workers, c = the unemployed

Table Ⅳ-11 indicates the results of the analysis of determinant factors affecting the status employment by types of qualification, by utilizing

dummy variables. The dependent variable is 'employment'. The types of qualification are categorized as 'national technical qualifications (DWHO1)', 'national qualifications (DWHO2)', 'private qualifications (DWHO3),' and 'others (DWHO4).' Then, each type of qualification is given a dummy variable.

According to the results, only the variable, 'national qualification', shows a positive relationship with employment; meanwhile, the effects of the other variables on employment are not statistically significant.

Table Ⅳ-11. Determinant Model on Employment by the Types of Qualification

Variables	Estimated coefficients	SD
Constant	-7.163	(0.216)***
National technical qualification (dwho1: Possession of qualification =1)	0.371	(0.087)***
National qualification (dwho2)	-0.139	(0.147)
Private qualification (dwho3)	0.317	(0.201)
Other qualification (dwho4)	0.488	(0.316)
Vocational training (dtrain=1)	0.513	(0.161)***
Gender (dsex:male=1)	1.011	(0.044)***
Marital status (dmarr:married=1)	-0.140	(0.061)**
Age (age)	0.372	(0.010)***
Square of age (agesq)	-0.004	(0.000)***
High school graduate (dedu3)	-0.124	(0.059)**
Junior college graduate (dedu4)	0.234	(0.095)**
College graduate (edeu5)	-0.088	(0.071)
Number of household (hnob)	-0.080	(0.016)***
Household income (hinc)	0.000	(0.000)***
Number of samples	12042	
-(Log, maximum level)	-6675.9	

Note: 1) *** p<.01, ** p<.05, * p<.1

2) a = the employed, b = the unemployed

6) Effects of Qualification on Wages

In this study, the following equation is taken into consideration to estimate the effects of qualification on wages.

$$\ln W = X\beta + Q\alpha + \Sigma$$

In the equation, ln W represents log wages, X a vector of explanatory variables consisting of factors affecting wages, β a coefficient vector related to the explanatory variables, Q dummy variable indicating the possession of qualification, α estimated coefficients, and Σ a measurement error. The estimated values of the coefficient α represent the premium of wages influenced by whether or not one possesses qualifications.[8] It was hypothesized that the coefficients indicating the possession of qualification, in regard to the determinant factors of wages, are the same.

In this analysis, explanatory variables includes personal characteristics such as gender, marital status, age, square of age, years of employment, square of years of employment, years of education, square of years of education, and having vocational training or not, as well as employment characteristics such as paid job, full-time or part-time, the existence of labor unions in a company, sizes of companies dummy, industry dummy, and occupation dummy.

Table Ⅳ-12 shows the estimated results of the equation of wages mentioned above. It is revealed that the dummy variable of the possession of qualification is statistically significant and the value of its coefficients is 0.064, which means that the level of wage premiums affected by qualification is 6.6%.

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8) It would be possible to yield a model that shows the wage differences between those with qualification and those without it. However, this study took an integrated model with a dummy indicating whether one possess qualification or not.

In regard to other explanatory variables, those who have paid jobs, who are older, who are male, and who have more seniority tend to be higher paid. Regarding the squares of both age and seniority, a negative significance is shown. The results coincide with that of determinant factors of the general equation for wages.[9]

In the case of a selective bias model shown in Table Ⅳ-13, the probability of those with qualification becoming waged employees was estimated using explanatory variables such as personal characteristics and the possession of qualification and then, a Probit model that is the first modified selective bias model, was also estimated. With these estimations, a sample selection model was produced. In Table Ⅳ-13, the value of lambda (λ) was analyzed as insignificant[10] and when it was estimated after the modification of the selective bias model, the level of wage premiums affected by qualification was 7.7%.

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9) It is indicated that wage premium by a comparison between those with qualification and those without it is not statistically significant.

10) The reason that the value of Lambda is not statistically significant is that when established a Probit model, variables in the panel data that can explain the possibility of becoming waged employees are enough to be analyzed.

Table Ⅳ-12. Estimated Results of the Wage Equation of Both Waged and Non-waged Employees (OLS Estimation)

Variables	Estimated coefficients	SD
Constant	2.146	(0.112)***
Possession of qualification (dskill: poss. of qual=1)	0.064	(0.020)***
Vocational trainings (dtrain: train=1)	0.037	(0.038)
Paid job (dpaid: psid=1)	0.234	(0.019)***
Gender (dsex: male=1)	0.330	(0.016)***
Marital status (dmarr: married=1)	0.026	(0.020)
Age (age)	0.056	(0.005)***
Square of age (agesq)	-0.001	(0.000)***
Years of Employment (ytemu)	0.028	(0.003)***
Square of year of em. (ytenusq)	-0.063	(0.010)***
Years of education (yedu)	0.000	(0.008)
Square of year of ed. (yedsq)	0.002	(0.000)***
Size of company (dsize3)	0.043	(0.026)*
Size of company (dsize4)	0.058	(0.037)
Size of company (dsize5)	0.100	(0.021)***
Labor union (dunion: union=1)	0.067	(0.021)***
Full time (fp: full time=1)	0.528	(0.027)***
Industry (dind2)	0.144	(0.056)**
Industry (dind4)	0.241	(0.059)***
Industry (dind5)	0.228	(0.058)***
Industry (dind6)	0.305	(0.065)***
Industry (dind7)	0.174	(0.061)***
Industry (dind8	0.253	(0.063)***
Industry (dind9)	0.154	(0.056)***
Occupation (docc2)	-0.105	(0.057)*
Occupation (docc3)	-0.178	(0.054)***
Occupation (docc4)	-0.236	(0.054)***
Occupation (docc5)	-0.275	(0.056)***
Occupation (docc7)	-0.284	(0.055)***
Occupation (docc8)	-0.325	(0.055)***
Occupation (docc9)	-0.442	(0.055)***
Number of samples	3,632	
Adjusted R^2	0.58	

Note: 1) *** p<.01, ** p<.05, * p<.1

Table IV-13. Estimated Results of the Wage Equation including a Modified Selective Bias Model

Variables	Estimated coefficients	SD
Constant	1.989	(0.327)***
Vocational trainings (dtrain: train=1)	0.048	(0.044)
Paid job (dpaid: psid=1)	0.234	(0.019)***
Gender (dsex: male=1)	0.343	(0.029)***
Marital status (dmarr: married=1)	0.016	(0.028)
Age (age)	0.062	(0.013)***
Square of age (agesq)	-0.001	(0.000)***
Years of Employment (ytenu)	0.028	(0.003)***
Square of year of em. (ytenusq)	-0.063	(0.010)***
Years of education (yedu)	-0.002	(0.009)
Square of year of ed. (yedsq)	0.002	(0.000)***
Size of company (dsize3)	0.043	(0.026)*
Size of company (dsize4)	0.058	(0.037)
Size of company (dsize5)	0.100	(0.021)***
Labor union (dunion: union=1)	0.067	(0.021)***
Full time (fp: full time=1)	0.528	(0.027)***
Industry (dind2)	0.144	(0.056)***
Industry (dind4)	0.241	(0.059)***
Industry (dind5)	0.228	(0.058)***
Industry (dind6)	0.305	(0.064)***
Industry (dind7)	0.174	(0.060)***
Industry (dind8	0.254	(0.062)***
Industry (dind9)	0.155	(0.055)***
Occupation (docc2)	-0.106	(0.057)*
Occupation (docc3)	-0.178	(0.054)***
Occupation (docc4)	-0.235	(0.054)***
Occupation (docc5)	-0.275	(0.056)***
Occupation (docc7)	-0.284	(0.055)***
Occupation (docc8)	-0.325	(0.055)***
Occupation (docc9)	-0.442	(0.054)***
Possession of qualification (dskill: poss. of qual=1)	0.075	(0.029)***
LAMBDA(λ)	0.048	(0.094)
Number of samples	3,632	
Adjusted R^2	0.58	

3. The Survey

In the survey, information on the relationship between qualification and human resources management was analyzed. The information was obtained from employees and those in charge of personnel management.

An investigation of all qualifications available in South Korea would be almost impossible; therefore, this study focuses only on the manufacturing and information technology (IT) industries. The rationales for selecting these two areas are as follows.

First, the majority of those who acquire qualification related to the IT area are known as 'white collar' and the IT industry, which requires the creativity of employees and the flexibility of companies, is currently considered the most important industry for South Korean economy. Such an industry is developed in the external market. It requires an annual income wage system operated by job evaluation, rather than a monthly salary operated by seniority. It also demands a personnel management system for the vocational ability of employees.

Second, the majority of those who acquire qualification related to the manufacturing industry are known as 'blue collar'. The number of applicants in this industry is the largest, a wider variety of qualifications are available, and the qualifications are evenly distributed. In addition, the history of qualification is quite old and it is more likely to be regarded as a certificate recognizing ability. In this study, the structures of automobile companies were examined to look at qualifications in the manufacturing industry. Such companies are usually developed in the internal market; thus the system of human resource management is operated by seniority.

1) General Characteristics of Those with Qualifications

Of the total samples of this analysis, males consist of more than 90% of the samples and females 10% or so. No females were examined in the manufacturing area, which means that female samples are concentrated only in the IT area in the analysis (See Table Ⅳ-14).

Of the total samples, about 50% were college graduates and 36% high school graduates. In manufacturing, only 19.6% of the samples were college graduates; however, in IT, 84.1% were college graduates. In other words, the academic achievement of those who are engaged in the field of IT is higher than that of those in manufacturing. Of the samples who possess national qualifications, or national technical qualifications, about 40% of them were college graduates; meanwhile, 90% of those who possess private qualifications or foreign qualifications were college graduates as well.

Table IV-14. General Characteristics of the Samples

(Units: persons, %)

Table IV-14. General Characteristics of the Samples

(Units: persons, %)

Classified		No qualification	Qualification	Areas of industry			Types of qualification			Total
				Manufacturing	IT	Others	National qualification	National skills qualification	Private & foreign qualification	
Sex	Male	134(89.0)	150(91.9)	56(100.0)	59(85.5)	31(88.6)	2(40.0)	114(97.4)	30(78.9)	304(91.2)
	Female	19(11.0)	14(8.5)		10(14.5)	4(11.4)	3(60.0)	3(2.6)	8(21.1)	33(9.8)
Academic achievements	Middle school	8(4.5)	1(.6)	1(1.8)				1(.9)		9(2.7)
	High school	62(35.8)	59(36.0)	40(71.4)	3(4.3)	14(40.0)		57(48.7)		121(35.9)
	Junior college	26(15.0)	23(14.0)	4(7.1)	8(11.6)	11(31.4)	3(60.0)	17(14.5)	3(7.9)	49(14.5)
	University	77(44.5)	81(49.4)	11(19.6)	58(84.1)	10(28.6)	2(40.0)	42(35.9)	35(92.1)	158(46.9)
Employment Status	Full time	135(97.2)	150(93.8)	51(94.4)	66(95.7)	30(90.9)	4(80.0)	109(93.6)	34(91.9)	305(92.4)
	Part time or daily based	2(1.2)	2(1.3)	1(1.9)	1(1.4)			1(.9)	1(2.7)	4(1.2)
	Contracted	7(4.1)	5(3.1)		2(2.9)	3(9.1)	1(20.0)	2(1.8)	2(5.4)	12(3.6)
	Others	6(3.5)	3(1.9)	2(3.7)				2(1.8)		9(2.7)
Yrs. Of employment in the current positions	1-5 yrs	77(50.3)	72(49.0)	11(20.8)	47(79.7)	12(41.9)	1(50.0)	44(40.0)	28(93.9)	149(49.7)
	6-10 yrs	38(19.0)	34(23.1)	17(32.1)	8(13.6)	8(25.8)	1(50.0)	28(25.5)	41(12.9)	63(21.0)
	11-15 yrs	28(15.3)	27(18.4)	18(34.0)	4(6.8)	4(12.9)		25(22.7)	1(3.2)	55(18.3)
	More than 16yrs	19(12.4)	14(9.5)	7(13.2)		6(19.4)		13(11.8)		33(11.0)
Yrs. Of total employment	1-5 yrs	66(41.6)	62(41.3)	8(15.1)	44(73.0)	8(26.7)	1(50.0)	35(31.3)	26(78.8)	128(41.6)
	6-10 yrs	39(24.7)	36(24.0)	14(26.4)	9(14.3)	12(40.0)	1(50.0)	28(25.2)	6(18.2)	75(24.4)
	11-15 yrs	21(13.3)	30(20.0)	19(35.8)	7(11.1)	2(6.7)		27(24.3)	1(3.0)	51(16.6)
	More than 16yrs	32(20.3)	22(14.7)	12(22.6)	1(1.6)	8(26.7)		21(18.9)		54(17.5)
Total		158(100.0)	150(100.0)	53(100.0)	63(100.0)	30(100.0)	2(100.0)	111(100.0)	33(100.0)	308(100.0)

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Of the total samples, more than 90% were full-time employees. About 50% had worked at their current workplace for 1 to 5 years, 20% for 6 to 10 years, and 11% for more than 16 years. Comparing IT to manufacturing industries, it is found that 80% of employees in IT worked at the same workplace for 1-5 years; meanwhile, 20% in manufacturing tended to stay at the same workplace for 1-5 years. In the analysis of employment years by types of qualification, those with national qualifications and national technical qualifications tended to stay longer in the same workplace than those with private qualifications and foreign qualifications.

In the analysis of the total years of employment in the same workplace, it is indicated that about 70% of the total samples stayed for 1-10 years. However, 15% in manufacturing, compared to 75% in IT, usually stayed in the same workplace for 1-5 years. Meanwhile, only less than 2% of those in IT, compared to more than 20% of those in manufacturing, stayed in the same workplace for more than 16 years.

Table Ⅳ-15 indicates that many obtained qualifications in school. About 64% of those in manufacturing and 47% of those in IT obtained qualifications as students. It is also shown that those engaged in IT are more likely than those in manufacturing to obtain qualifications when employed or unemployed.

Table Ⅳ-15. Status Upon Obtaining Qualifications

(Units: persons, %)

Satus / Industry	Manufacturing	IT	Others	Total
Students	35(63.6)	32(46.4)	26(74.3)	93(58.5)
Employed	17(30.9)	25(36.2)	9(25.7)	51(32.1)
Unemployed	1(1.8)	11(15.9)		12(7.5)
Military personnel	1(1.8)			1(.6)
Others	1(1.8)	1(1.4)		2(1.3)
Total	55(100.0)	69(100.0)	35(100.0)	159(100.0)

Those who are currently in manufacturing usually obtained qualifications in high school and in college, and it is suggested that it is not easy for them to obtain qualifications when unemployed due to the characteristics of the qualification. However, those in IT prefer obtaining qualifications when employed because they use it as an instrument to further develop of vocational ability, promotions, and increases in salaries. Furthermore, the high demand for human resources in the IT sector makes it easy for them to obtain qualifications even when unemployed.

2) Types of Human Resources Management

The analysis of important items and various standards utilized by companies when they hire employees makes it possible to understand the different types of human resources management. In this study, it is indicated that in the manufacturing industry the item, 'personality and diligence (58%)', is considered the most important for recruitment, and items, such as 'basic vocational abilities (33%)' and 'professional

knowledge (8%)', followed. Meanwhile, in the IT industry, the item, 'professional knowledge (60%)', is regarded as the most important and items, such as 'basic vocational ability (23%)' and 'personality and diligence (14%)', followed. With the results of the analysis, it is revealed that many Korean companies especially in manufacturing prefer hiring generalists and then training them to become professionals. In the area of IT, it is found that recruitments tend to place top priority to job duty.

Table Ⅳ-16. Important Items for Recruitment

(Units: persons, %)

Items	Industries			Total
	Manufacturing	IT	Others	
Personality & diligence	23(57.5)	5(14.3)	4(40.0)	32(37.6)
Basic vocational abilities (Creativity, ability to solve problems, & personal relationship with others)	13(32.5)	8(22.9)	3(30.0)	24(28.2)
Professional knowledge	3(7.5)	21(60.0)	2(20.0)	26(30.6)
Others	1(2.5)	1(2.9)	1(10.0)	3(3.5)
Total	40(100.0)	35(100.0)	10(100.0)	85(100.0)

For more specified information on the types of human resources management, wages and rewards, promotions, education, personnel changes management as well as recruitment methods were also analyzed. Then, the types of human resources management were categorized as job duty-oriented, job function-oriented, and seniority-oriented. Such types of human resources management serve as important factors affecting the

qualification system. Based on this rationale, this study investigated the types of human resources management operated in both the manufacturing and IT industries.

In the area of manufacturing, companies recruit employees by looking at academic achievements, sex, and job classification and in the area of IT. They look mostly at job duty classification. In other words, in manufacturing, recruitment is conducted with a priority to seniority-oriented human resource management and in the area of IT, there is more priority placed on job duty-oriented human resource management (See Table Ⅳ-17).

Table Ⅳ-17. Contents and Types of Human Resources Management by IT, Manufacturing and Other Industries

(Units: persons, %)

Table Ⅳ-17. Contents and Types of Human Resources Management by IT, Manufacturing and Other Industries

(Units: persons, %)

Classified	Items		Manufacturing	IT	Others	Total
Types of employment	Job duty	Employed by job duty classification	15(37.5)	21(60.0)	2(20.0)	38(44.7)
	Job function	Employed by academic achievements & sex		1(2.9)	1(10.0)	2(2.4)
	Seniority	Employed by academic achievements & sex + by business classification	25(62.5)	13(37.1)	7(70.0)	45(52.9)
Vocational training education	Job duty	Job duty oriented	29(74.4)	23(65.7)	6(60.0)	58(69.0)
	Job function	Ability and expertness oriented	6(15.4)	10(28.6)	2(20.0)	18(21.4)
	Seniority	Personal relationship oriented	4(10.3)	2(5.7)	2(20.0)	8(9.5)
Promotion	Job duty	Less significance of promotion	7(19.4)	7(20.6)	1(10.0)	15(18.8)
	Job function	Separate operation of wage increase and promotion	18(50.0)	22(64.7)	7(70.0)	47(58.8)
	Seniority	Priority to promotion	11(30.6)	5(14.7)	2(20.0)	18(22.5)
Wage system	Job duty	Job duty oriented	13(32.5)	9(26.5)	3(33.3)	25(30.1)
	Job function	Job function oriented	11(27.5)	16(47.1)	4(44.4)	31(37.3)
	Seniority	Seniority oriented	16(40.0)	9(26.5)	2(22.2)	27(32.5)
Types of personnel change	Job duty	Placed by job duty and not common to transfer during employment	30(75.0)	30(85.7)	5(50.0)	65(76.5)
	Job function	Assigned by job function and qualification & common to rotate positions	5(12.5)	4(11.4)	3(30.0)	12(14.1)
	Seniority	Assigned by academic achievements and sex and common to rotate positions	5(12.5)	1(2.9)	2(20.0)	8(9.4)
Total			40(100.0)	35(100.0)	10(100.0)	85(100.0)

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In both industries, it is indicated that the job function-oriented human resources management is preferred for employees' promotion. In wage systems, 'seniority' is an important factor in the manufacturing industry and 'job function' in the IT industry. In regard to the types of vocational training and of personnel changes, job duty-oriented trainings and changes were mostly provided both industries. In other words, it is the job duty-oriented human resources management that is preferred in vocational training and personnel changes in both industries.

Table Ⅳ-18 indicates again that the types of human resources management of both industries are diverse; job duty-oriented and seniority-oriented human resources management are mainly utilized in the recruitment and wage systems in the manufacturing industry; while job duty oriented and job function-oriented human resources management were employed in the IT industry.

Table Ⅳ-18. Types of Human Resources Management Employed by Both Industries

Classified	Manufacturing			IT		
	Job duty	Job function	Seniority	Job duty	Job function	Seniority
Types of recruitment			○	○		
Training & personnel change	○			○		
Promotion		○			○	
Wages			○	○		

3) Degrees of Usage of Qualification

As mentioned above, the seniority-oriented human resources management and the job duty-oriented human resources management are the main mechanisms in manufacturing and IT, respectively. In other words, the internal labor market is developed in the manufacturing industry and the external labor market in the IT industry. This study examined how qualifications have been utilized in human resources management in both industries, which have different types of labor market. In this analysis, it is revealed that qualification is the most actively used upon 'recruitment.' Then 'personnel changes' and 'wages and rewards' followed. Table Ⅳ-19 indicates that the degrees of usage of qualifications are higher in the IT industry. In other words, the usage of qualification in the manufacturing industry is not as high as that of the IT industry, due to the development of the internal labor market.

Table Ⅳ-19. Usages of Qualification in Human Resources Management

Classified	Manufacturing	IT	Others	Total
Employment	3.8000	3.8571	3.7000	3.8118
Promotions	3.0750	3.0857	3.3000	3.1059
Lay-off	2.4103	2.5294	2.5000	2.4699
Wages	3.1750	3.2059	3.4000	3.2143
Vocational trainings	3.1750	3.2059	3.2000	3.1905
Personnel change	3.3590	3.4706	3.6000	3.4337
Total	3.1496	3.2206	3.2833	3.1948

4. Case Study of In-firm Qualification

Employees can obtain a in-firm qualification by taking an authorized examination administered by a company. The company conducts the examination to develop employees' vocational abilities, and the government provides various supports for such in-firm qualification programs. It is indicated in the Item 3 of Clause 1 of Article 26 of Act for Employment Insurance that an employer should support in-firm qualification for the advancement of their employees' vocational skills.

It is the Provision of the Support for a Business of In-firm Qualifications that makes the full support of employers possible. The Provision regulates the standards of recognition of qualifications and the amounts of supporting funds.

Table Ⅳ-20 indicates the various kinds of corporate qualification recognized by the Provision. It is shown that in-firm qualifications generally concentrate on national qualifications concerning vocational skills; however, at the same time, other in-firm qualifications are also related to specialized areas in accordance to job duty. Such companies can receive development and management funds for support budgets. However, a qualification that has been developed for more than three years is not qualified for support.

Table Ⅳ-20. The Status of Recognized In-firm Qualifications

Enterprises	*Qualification Items*	Remarks
Samsung SDS (Inc.)	· Innovator	
Hae In (Inc.)	· Construction and machinery maintenance (Electronics, Engine, Oil Pressure, Electric Power Delivery)	
Samsung Everland (Inc.)	· Boom (crane) Manager	
LG Electronics (Inc.)	· SIX SIGMA Quality Management	
Sam Yong Inspection Engineering (Inc.)	· NDT (PT, RT, MT, LT)	
KPS (Inc.)	· Machinery(general machines, valves, pumps, turbines, reactor coolant pumps, speed governors, diesel generators, Vibration analysis, refrigerator, Steam turbines, air compressors, post tendon testing, fans, air heaters, boilers, fuel facilities) · Electronics (general electronics, motors, transformers, automatic pressure governors, transformers, breakers, generators, protection relays, large rotor repair & balancing, electronic dust collectors, fuel facilities) · Maintenance and control (general maintenance & control, maintenance & control) · Reactor fuel charging · Quality(inspector, superintendence(machinery, electronics)) · NDT (PT, RT, MT, UT, ECT, LT, VT) · Welding · Industrial cleaning · Transmission facilities (insulator washing and detection, dead line maintenance, live line maintenance) · Crane driving	

주) Standard(2000)

One of the most important aspects of corporate qualification is that it enables both employers and employees to increase productivity and to develop their vocational abilities. In addition, it allows for evaluations of ones' job duty to be used as information for human capital, and as a result, such accumulated human capital enhances a company's competitive edge. (KRIVET, 1999)

However, there are no specified standards and methods of the recognition of corporate qualifications stipulated by law. Thus, regulation in regard to this matter, in the future, needs to be made for the systematic management of its quality.

1) System of In-firm Qualification

This study examined the background of in-firm qualification, the corporate qualification system, and the usages of human resources management, by looking at three companies that have implemented in-firm qualification systems recognized by the Ministry of Labor.

Company 'A' implemented the in-firm qualification system in 1989, company 'B' in 1983, and company 'C' in 1998. These three companies had already introduced and implemented the in-firm qualification system before the enactment of the Provision of the Management of In-firm Qualification System. This is because many companies at that time had difficulty securing competent workers to fulfill their various specialized job duties, even though they possessed national technical qualifications. Thus they provided employees with their own vocational training and administrated related qualification examinations to increase productivity and enhance the quality of production.

It is shown that in-firm qualifications offer more diverse and specified areas and programs than national skills qualification programs. In other

words, the subjects and levels of the in-firm qualifications system are specified and subdivided because their functions are based on the contents of job duties. In addition, the contents that are dealt with in each subject of a in-firm program are more job duty related than those of vocational training institutes. For example, Company B offers an English class as one of the subjects for the qualification examination, based on the fact that the manuals for repairing various machines are mostly written in English.

The way of implementing the in-firm qualification examinations includes both theory and practice, like in the national technical qualification program; but the former focuses more on practice than the latter. This is because institutes offering national technical qualifications usually have difficulty securing equipment for vocational training; thus, this restricts the institutes' operations of the programs in regard to practice. Meanwhile, the purpose of the in-firm qualification program is to assign trainees to their related job sites immediately after they obtain qualification. Furthermore, all procedures are administered within the company; thus, trainees are provided with on-site vocational training by using the equipment already there.

However, a major difference between the in-firm qualification and national technical qualification programs is in the way they classify qualifications, the eligibility of applicants, and re-training programs. In the current national technical qualification system, the levels of qualification and the eligibility of applicants are closely related to their academic achievements; at the same time, the careers of the applicants are considered important but there is still difficulty in evaluating each applicant's career. Meanwhile, in the in-firm qualification system, the levels of the qualifications and the eligibility of applicants are not related to academic achievements. This is because the levels of the

qualification are classified by the contents of job duty. In the in-firm qualification system, accurate evaluations of the applicant's career are available; in other words, how experienced the employees are on the job site, how much vocational training they have had, whether or not they possess other qualifications are all evaluated. Therefore, the levels of in-firm qualification and the eligibility of applicants are diversified by the characteristics of each business industry.

Re-training programs in the national technical qualification system have been eliminated as a way of alleviating regulations. Therefore, once a qualification is earned, it is effective for life. However, in the case of in-firm qualifications, after a certain amount of time passes, employees should be evaluated and approved in regard to their job performances to see whether the levels of the job performance agree with their qualification. If the result of the evaluation is not satisfactory, the qualification can be revoked.

Therefore, it is shown that the in-firm qualification system, which is shaped by the contents of various job duties, makes a contribution to developing employees' vocational abilities and to increasing productivit y.[11] In addition, employees who have obtained in-firm qualifications authorized by the Act for Employment Insurance and its related implementing provisions are given more chances for promotion. Most companies utilize the in-firm qualification system rather than the national technical qualification system to determine promotions, wages, and personnel changes. In addition, the utilization of the in-firm qualification system makes the labor unions of companies aware of the necessity of the qualification system and it also makes a contribution to the improvement of the relationship between companies and labor unions.

However, there is a limit to the utilization and compatibility of in-firm

11) In the case of Company C, approximately W1,137 billion was yielded in 2000.

qualification systems nationwide because as mentioned above, its system is established by the contents of various job duties of individual companies. In addition, in terms of operation, the system is less systematical than that of national technical qualification systems. But, the in-firm qualification system deals with the demands and supplies of the labor market with outstanding marketability and resiliency.

As a result, it can be argued that the in-firm qualification system functions as an instrument to solve problems found in the national technical qualification system by recruiting employees to fill the demands of each company and by evaluating their job performances. They also can be utilized as an important source of information on promotions, vocational training, wages, and personnel changes in companies.

Table Ⅳ-21 indicates differences between the in-firm qualification and the national technical qualification systems. The former is operated in a way that gives priority to job duty of companies; meanwhile, the latter is operated systematically and used nationwide, even though it does not fully satisfy the demands of companies.

Table Ⅳ-21. Comparison between In-firm Qualifications and National Technical Qualifications Systems

Contents	National technical qualification	In-firm qualification
Items of qualification	Disagreement with job contents	Agreement with job contents
Grades of qualification	Academic achievements oriented	Job performance oriented
Eligibility	Academic achievement	Experiences on the job site
Contents of evaluations	Contents of vocational trainings	Contents of job duty
Methods of evaluations	Theory and practice	Theory and practice
Operations of qualification management	Systematic	Depends on the capability of a company
Re-training programs	N/A	Implemented
Prevalence in society	Good	Not good
Usages of company	Not good	Good

2) Usages of Infirm Qualifications

Table Ⅳ-22 indicates the analysis of how the in-firm qualification system has been utilized in human resources management. In general, it is revealed that in-firm qualifications are more related to human resources management than the national technical qualifications. In the case of Company 'A', it is specified in the regulations of personnel changes and employee's wages that the in-firm qualifications influenced decisions on promotions, wages, vocational training, and personnel changes. The same items are specified in the regulations of both the Company 'B' and 'C'.

In regard to monetary rewards for the possession of qualifications, employees receive W20,000 if they possess one national technical qualification; meanwhile, they receive W40,000 for the second grade of the in-firm qualifications and for W80,000 for the first grade of the in-firm qualification.

Table Ⅳ-22. Relationship between the In-firm Qualification System and Human Resources Management

Human resources management	Company A		Company B		Company C	
	In-firm qualification	National technical qualification	In-firm qualification	National technical qualification	In-firm qualification	National technical qualification
Promotions	○	○	○		○	
Transfers & lay-off						
Wages	○	○	○	○	○	
Vocational training	○				○	
Personnel changes	○	○			○	

Note: ○ indicates direct relationship between the qualification system and human resources management.

Table Ⅳ-23 shows how the in-firm qualification system has had an influence on job performance evaluations. In both Companies 'A 'and B', those with qualifications are more likely to receive positive evaluations regarding career achievements and their attitudes towards job duties. In Company 'C', the evaluations are administered in the same way; however, there are a few differences among departments, depending on projects as well as qualifications.

Table Ⅳ-24 indicates that the implementation of the in-firm qualification system has made a huge contribution to the enhancement of employees' motivation and the advancement of their vocational skills. It is evident in Company 'B' that productivity has increased and the vocational skills of workers have been enhanced. In Company 'C', the amount of 1,137 billion won was created by 458 projects in 2000.

Table Ⅳ-23. Relationship between the In-firm Qualification System and Job Performance Evaluation

Evaluation		Evaluation items		
		Company A	Company B	Company C
Analysis of evaluation	Accomplish-ments	Amount of jobs(V)	Amount of jobs	
		Quality of job(V)	Quality of job(V)	
		Levels of goal achievement(V)	Levels of goal achievement(V)	
			Improvement of job duty	
	Attitudes	Endeavor of one's vocational development(V)		
		Disciplined		
		Cooperation		
		Optimism / security awareness		
	Ability	Basic ability(V)	Performance ability (V)	
		Overall	Knowledge of job duty (V)	
		Ability of judgment(V)	Ability of adaptation (V)	

Note: V indicates items indirectly affecting the job performance evaluation.

It is shown that labor unions support the operation of the in-firm qualification system. In other words, they encourage the workers to obtain qualifications because qualifications can lead to increases in productivity and salary. In Company 'C', a labor union plays a significant role in the 6 Sigma Belts of technicians. However, the labor unions do not participate as actively in planning and implementing the in-firm qualification system.

Table Ⅳ-24. Improved Items after the Implementation of the In-firm Qualification System

Contents of evaluation	Company A	Company B	Company C
Increase in productivity	5	4	5
Development of vocational ability	5	5	5
Improvement of the relationship between labor and capital	5	4	5
Efficient personnel changes	5	4	5

Note: 1 indicate 'absolutely not' ~ 5 'absolutely right'

In conclusion, companies should support the labor unions' active participation in the operation of qualification systems to develop vocational ability and to increase productivity.

V. Recommendations for the Effective Usages of the Qualification System

1. Basic Directions for the Effective Usages of the Qualification System

Obtaining qualifications is considered a part of the development of one's vocational skills and certification of qualifications are also regarded as proof of their ability. Thus, rewards for the possession of qualifications should be realized in human resources management. The usages of qualifications for those who are currently working need to be activated to create a stronger connection between the qualification and reward systems. The qualification system will be more efficient if employers pay more attention to the development of employee's vocational ability, and then as a result, an increase in productivity and the advancement of employee's vocational ability would follow.

As mentioned above, whether the qualification is well suited with the reward system or not will affect the usages of qualification. In a company where the internal market is developed, seniority and job function-oriented human resources management is common. In such a market, in-firm qualifications are considered very important. Thus, it is necessary that in-firm qualifications be reinforced to enhance employee's vocational ability and to tie the qualification into the reward system. In a company where the external market is developed, a job duty-oriented human resources management is generally operated. Thus, it is necessary to strengthen standardized qualifications (e.g., national qualifications) with

a priority to job duty to promote its usages (See Figure V-1). To realize these goals, the qualification system should be operated for the needs of employees. In other words, both employers and labor unions should pay attention to rewarding skillful employees for an effective usage of the qualification system.

2. Reinforcement of the Development of a Company's Human Resources

The development of human resources plays an important role in enhancing employees' vocational ability and activating the qualification system. The more often people transfer, the more important their vocational ability becomes. Today, many companies are more likely to recruit employees out of the external labor market than ever before; thus the effects of vocational training conducted by an individual company have begun to decrease in significance.

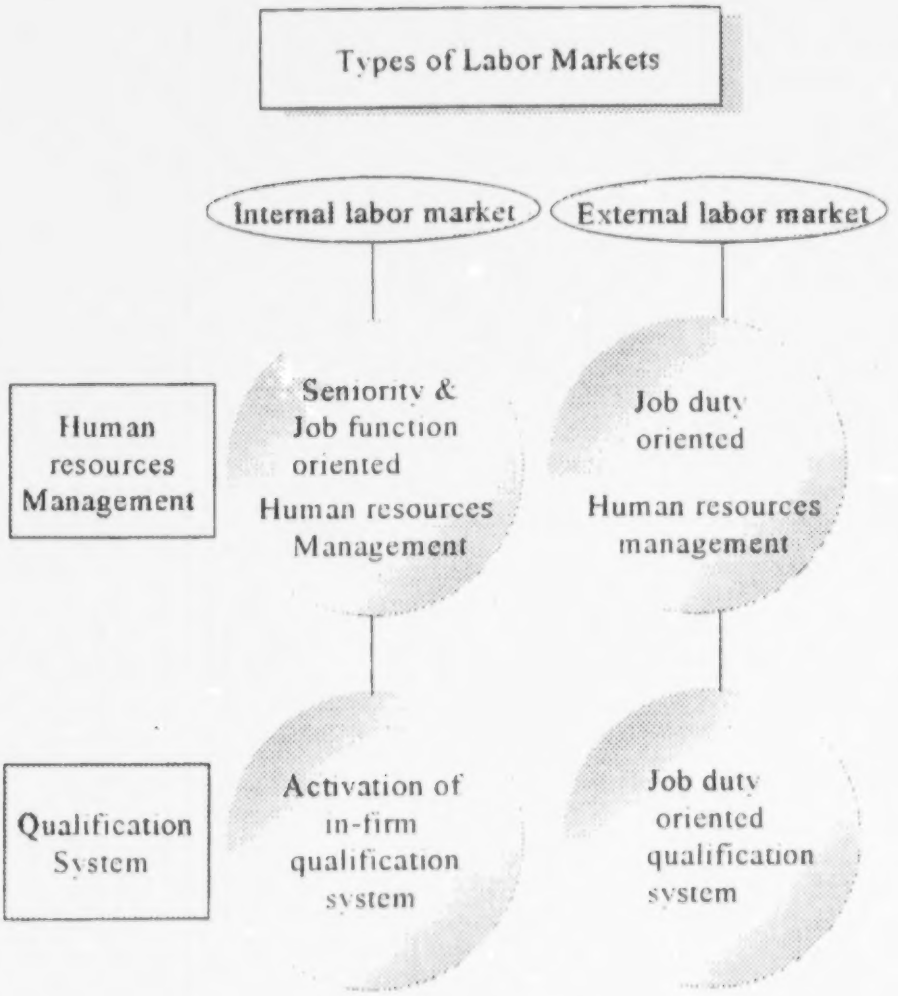
Types of Labor Markets
Internal labor market
External labor market
Human resources Management
Seniority & Job function oriented Human resources Management
Job duty oriented Human resources management
Qualification System
Activation of in-firm qualification system
Job duty oriented qualification system

Figure V-1. Relationship between Types of Labor Markets & Human Resources Management and the Qualification System

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In particular, small-sized companies have difficulties operating vocational training programs alone and it makes them less competitive than those of larger companies in the labor market. Small and medium sized companies usually experience financial and management problems with the implementation of vocational training programs; thus a kind of syndicated operation is needed. Therefore, it is suggested that small and medium sized companies entrust qualification programs to organizations affiliated with the industry.

The most serious problem of qualification systems nowadays is that they are more likely to be theory oriented; thus they can be considered outdated due to the lack of practical training needed in the labor market. The reason that they tend to be theory-oriented is that most of applicants for the qualification programs are students. Therefore, their competitive power in the labor market is not as strong. Hence, on-the-job training in modernized facilities is needed. It is recommended that individuals obtain the qualification after a certain amount of on-the-job training even though they have passed the written examination. Furthermore, it is also recommended that employees be allowed to take the examination after they gain some work experience. These actions will strengthen the relationship between qualifications and job duty.

3. Establishment of a Human Resources Management System for the Development of Vocational Ability

Human resources management is a necessary instrument for the development of vocational ability. Thus, it is suggested that both employers and labor unions work together on its effective implementation.

A thorough analysis of the budget and vocational training is needed for the effective implementation of the training programs. Recruitment should be conducted on a long-term as well as a short-term plan and recruitment should be handled by knowledgeable and capable employees. Job performance evaluations should be conducted on the basis of employee's vocational ability and achievements. In this vein, the reward system should also be operated based on individual vocational ability and achievements, not on seniority (Yoo, Kyu Chang, 1999).

A Japanese reward system with a priority to job function is a typical model for the development of vocational ability. In such a reward system, items related to job performance are taken into consideration more so than those related to seniority.[12] It is also suggested that the reward system should be reformed along with other changes in human resources management, such as promotions, evaluations, and vocational training programs.

12) The significance of the factors for wages would be different according to required skills or the degrees of expertise.

4. Activation of In-firm Qualifications

In South Korea, each company determines the amount of wages and the working conditions of employees. In other words, the status of employees is determined by various systems set by the company; thus in-firm qualifications play a very important role in determining wages and promotions. As a result, to activate in-firm qualification programs is to develop the vocational ability of employees.

Currently, the Ministry of Labor grants funds to companies with in-firm qualification programs, after an evaluation; however, the problem is that there are no objective standards for the evaluation. Therefore, the proper procedures and standards for recognizing qualifications are needed to control their quality. In addition, by activating a in-firm qualification system, employees' vocational abilities can be advanced and the productivity of the company can increase as well.

Consistent quality control of the qualification system is needed for effective usage, operation, and management in a society. To achieve this, it is suggested that the ministries concerned conduct research on the development of qualification subjects and on the management and operation of the qualification system for companies that are willing to adopt it.

The following procedures and standards of recognizing in-firm qualifications are recommended to raise public confidence.

First, it is recommended that companies be given a fixed term to request recognition of their own in-firm qualification systems, on the basis that the committees and plans are not systematically constructed if they are allowed to make a request anytime during the year.

Second, the evaluation should be performed by institutes affiliated with the qualifications rather than by individuals (See Figure V-2). Having the

institutes evaluate will increase confidence in and efficiency of the qualification system.

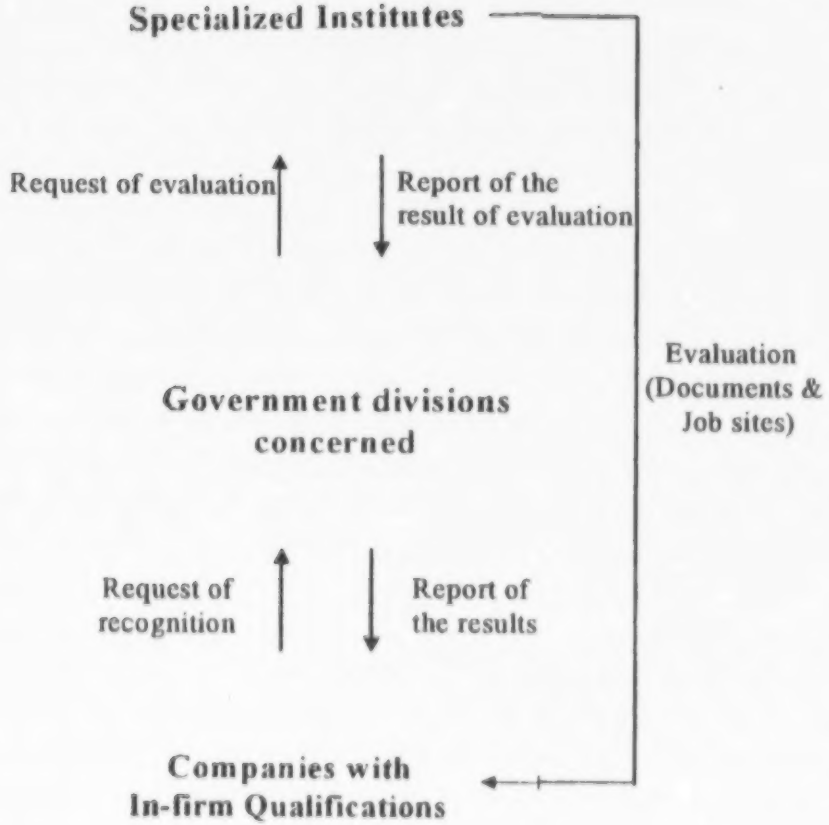

Figure V-2. Procedures for the Recognition for In-firm Qualifications

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Third, the standards of the evaluation should be determined. At least, standards for the evaluation of the management and operation of the in-firm qualification systems are necessary even though there might be a limit to how to evaluate the diverse qualifications with the same standard. Table V-1 indicates the various standards for the evaluation of the system, including operation, management, usages, and the cooperation of employers and labor unions for its effective operation.

Table V-1. Evaluation Standards of In-firm Qualification Systems

Evaluation areas		Evaluation subjects
Management & operation system of corporate qualification	Necessity of qualification	Areas of in-firm qualification
		Purpose of the operation of corporate qualification systems
		Outcome of qualification examinations
	Appropriateness of qualification system	Standards of evaluation
		Methods of evaluation
		Subjects of evaluation
		Eligibility for examinations
	Appropriateness of qualification examination	Standards for making up questions
		Process of making up questions & maintenance
		Examination plans & procedures of implementation
Management & operation of organization		Management & operation of organizations
		Status of specialists
		Budget
Usages of qualifications		Wages
		Promotions
		Personnel changes
Cooperation between labor and capital on the operation of qualification system		Design of qualification system
		Operation of qualification system
		Evaluations

5. Advancement of the National Qualification System with Job Duty Oriented

A qualification that is developed in the external labor market and can be used not only in a company but also in the entire sector, requires thorough planning with a focus on the needs of those who want to obtain it. In South Korea, the government has thus far handled human resources policies thus; therefore employees and companies, which are the actual users of the qualification system, have long been excluded in planning and implementing the policies. As such, a qualification system focusing on the needs of employees and companies is needed for the advancement of its usage. In addition, labor unions and industrial organizations should actively participate in the operation of the qualification system. This will improve vocational ability and help employees adapt to rapid changes in the market. In turn, it will help establish a new and more productive system.

1) Qualification Systems operated by the Private Sector

A qualification is classified as national and private depending on its sponsorship. The supplier of the former is the government and that of the latter are private organizations. Whether it's the government or the private sector, the sponsor should not make a profit in the operation of the qualification system. If the government tries to monopolize the operation of the qualification system, it might not satisfy the diverse needs of laborers whose expectations are getting higher due to the rapid changes in technology. Thus, the government should take into consideration the market failure of the qualification caused by a rigid

communication with its users. Hence, the government should take responsibility and compensate for failures in the qualification system. One of the ways to do is to entrust private organizations with operation. In order for this to happen, an evaluation system for selecting private organizations for this purpose should be established.

However, there are some problems with entrusting such responsibilities to the private sector. Quality control of qualification systems is possible when the government is in control. People trust it and its accumulated knowledge and experience. But, with the private sector, there might be a problem with securing public confidence. New personnel and equipments are also needed for the operation and management of the qualification systems. In addition, if private sectors meet red tape, it would be impossible for them to efficiently implement the qualification system.

The following suggestions are recommended to promote the usages of qualifications by entrusting the operation of the national technical qualification system to the private sector.

First, it is desirable that the sponsor government or private sector is determined by their characteristics. In other words, it is suggested that the government be responsible for the implementation of qualification systems that are concerned with welfare and security. Or it can also be in charge of areas in which few needs exist in the labor market but human resources still have to be produced strategically. In other words, the government should be responsible for the areas in which the public welfare is the main concern. Whereas, it is suggested that the private sector be responsible for the areas in which there is an abundance of social needs and rapid technology changes occur.

Second, to secure public confidence in the operation of qualification systems by the private sector, it is suggested that only authorized non-profit organizations be entrusted with the responsibility.

Third, the government should provide education programs with the private sector to cultivate new personnel and also to secure new equipment for the operation and management of qualification systems from affiliated companies and industries.

In addition, the government can solve problems caused by its centralized operation of the qualification system by entrusting responsibilities to authorized private organizations, and it is also suggested that the government only supervise not control operations.

The basic conditions of entrusting the operation of the qualification system to the private sector are: 1) to secure non-profit organizations and general organizations by business and 2) to differentiate organizations implementing qualification examinations from those conducting vocational training programs.

The result of the survey in this study indicates that a representative association of each business is interested in the operation of the qualification system. It is recommended that the organizations be entrusted with the operation of systems if they can satisfy the following conditions:

1) whether they are able to develop the qualification items
2) whether they can secure personnel for operation
3) whether they can secure equipment for operation
4) whether they can secure budget for operation

2) Reinforcement of the Roles of Labor Unions in the Operation of the Qualification System

Currently, labor unions have difficulty actively participating in the operation of the qualification system and in the development of vocational training programs. In South Korea, the internal labor market

that is divided by company has been developed. Thus, each company organizes labor unions. A law restricting the activation of labor unions has kept them from developing into unions organized by industry. The relationship between labor and capital in South Korea is also at the company level, compared to that in western countries where they are usually established by occupation and industry. Therefore, labor unions in South Korea lack professionalism. Qualifications are usually classified by occupation; thus labor unions have difficulty executing what is typically required for qualification systems. Therefore, the roles of the labor unions organized by industries should be reinforced in order for them to actively participate in the qualification systems. Labor unions organized by industries should actively participate in planning and evaluating the management of qualification programs on behalf of employees.

Meanwhile, company labor unions should actively participate in the operation of in-firm qualification systems. Because the qualification is considered an evaluation of individual ability, the result of the evaluation should have a direct affect on promotions and wages. With the union's participating in the operation of both qualification programs and vocational training programs, a new relationship between labor and capital can be created.

The existing deliberate 'council' by the current law related to the qualification system needs to be upgraded to 'an association' for the unions to efficiently participate in the operation of the qualification system. The current law concerning the national skills qualification system stipulates that the creation of a new subject, the standards of an evaluation, the status of eligibility for qualification ought to be deliberated by the council for their amendments. In the council, the head of the Federation of Korean Trade Union (FKTU)) serves as one of the requested members, but s/he does not actively participate in the operation

of the qualification system. Furthermore, labor unions are not included in the council.

The Promotion Act for Vocational Training stipulates that labor unions can deliberate on matters regarding corporate qualification systems recognized by the government through the Policy Council for Vocational Training and can evaluate the achievements of vocational training institutes through the Association for Vocational Training. The Association for Vocational Training does not include members of a labor union that represents laborers. The heads of Korean Confederation of Trade Union (FCTU), as representatives of laborers, participate in the Policy Council for Vocational Training, however, they do not play a role in controlling the quality of the qualification system. Thus, the roles of the labor unions should be reinforced to include quality control of the qualification system.

However, it is true that labor unions lack specialized knowledge of the qualification system. This is because their main duty up until now has been collective bargaining for the advancement of the status of laborers; therefore little attention had been placed on the development of vocational ability and the operation of the qualification system in their agendas. The executive board of the Korean Labor Union takes part in educational programs concerning leadership, vocational ability developments, and the analysis of administrative information conducted by the Korean Labor Education Institute. Furthermore, it is suggested that a vocational training research institute, like KRIVET, also develop and implement educational programs to inform unions about the qualification system.

6. Regular Evaluations of Qualification Systems and the Construction of a Qualification DB

Qualification functions as an instrument to screen employees and thus, obtaining qualification is considered a way to develop vocational ability. (Bae Jin Han, 1995). Evaluations of the labor market and on the demands for vocational training should be administered on a regular basis. However, the evaluation of the qualification system should precede this. As one way of evaluation, the Korean Industrial Human Resource Management sorted out 570 subjects of the national technical qualification programs in 2001. A year's time is not enough, thus more time should be given for the analysis of qualification subjects, standards of the evaluation, and job satisfaction. The results of the analysis suggest that the usages of the qualification should be promoted.

Evaluation that is conducted on a regular basis is a necessary condition for the development of qualification systems. However, it is difficult to administer evaluations of its usages as well as the results due to the lack of DB and panel information.

The Korean Labor Research Institute has conducted research on labor panels since 1998 and items on qualifications were included in the second research 1999. However, questionnaires on the qualification system were not structured by classification, thus it was not easy to utilize the results of the questionnaires. Furthermore, difficulties of securing samples made it hard to analyze its usages and outcomes.

Even though A Report on Basic Statistics of Wage Structure published by the Ministry of Labor, has information on qualifications, it only dealt with the national technical qualification system and does not provide any information on job-duty related qualifications. DB on Employment

Insurance published by the Central Information Center of Employment does not include information on the qualification system either. An Annual Statistics of Education published by the Ministry of Education includes only information on how many graduates of vocational high schools, junior colleges, and universities obtained qualifications and on the status of the national technical qualification system.

Thus, it is necessary to construct a DB on the qualification system for the evaluation of their usages on a regular basis.

Ⅵ. Conclusion

The labor market is becoming more flexible than ever before with a rapid change of the "Fordism productive system", and many companies are becoming more interested in the development of human resources creating a paradigm shift in human resources development.

In such circumstances, qualifications are becoming more and more important in the advancement of employees' vocational ability. It also helps indicate the levels of their vocational ability. Thus, research on the advancement of the usages of qualifications should be conducted.

This study examined the labor panel data and administered a survey as well as included a case study for the analysis of the usages of qualifications in the labor market. With the results of the analysis, this study has also suggested several ways to enhance the usages of the qualification system.

1. Results of the Analysis of the Usages of the Qualification System

First, qualifications help employees receive promotions in the workplace and at the same time raise job satisfaction. Furthermore, it is indicated in the analysis of an employment determinant model that those with qualifications are more likely to get jobs.

Second, it is also indicated by showing 6.6% of wage premium and 7.7% with a consideration of selective bias for those with qualifications that the qualifications have an influence on the increase of their wages.[13]

Third, it is evident in the survey that the degrees of the usages of the qualifications are closely related with types of the labor market and human resources management. The relationship is stronger in the external labor market in which a job duty oriented human resource management is prevalent (IT industry) than in the internal labor market in which a job function or seniority oriented human resources management is developed (manufacturing industry).

Fourth, it is shown that in-firm qualifications recognized by the government are more frequently utilized in companies as an instrument to evaluate employee's job performance than the existing national technical qualification system. It is also evident that the in-firm qualification system has a positive impact on the increase in productivity, the effective management of personnel changes, and the relationship between labor and capital.

13) It is not revealed how much such benefits are, compared to the total cost related to qualification.

2. Plans for the Activation of the Usages of the Qualification System

First, a qualification should be used as a standard in the objective evaluation of employee's job performances for the activation of the usages of national technical qualifications. However, many companies have considered employees' careers more important than their qualifications. It is required that education for national technical qualifications focus more on practical vocational training, and it is suggested that qualifications such as in-firm qualifications be necessary to consistently develop vocational ability. Companies are encouraged to implement an ability oriented human resources management for both the advancement of vocational ability and an increase in productivity.

Second, the degrees of the usages of the qualifications can be increased if the right type of qualification system is operated in its relevant labor market and human resources management. In other words, in the internal labor market in which a job function or seniority oriented human resources management is mainly employed such as in the manufacturing industry, corporate qualifications should be actively utilized for the development of employee's vocational ability and then the achievements should directly influence the rewards. Whereas, in the external labor market in which transfer of human resources frequently occurs such as in the IT industry, a standardized qualification system that can be used nationwide rather than in-firm qualifications should be actively utilized.

However, it is expected that the external labor market will dominate in South Korea in the near future, thus a job duty oriented standardized qualification that can be compatible in the entire labor market should be

developed. It will promote the usages of qualifications and also reduce the costs related to the operation and management of the qualification programs.

Third, if the government is to operate a two-track qualification system that is, for the internal and external market, it should plan and develop a policy on the qualification system for each type of market. In the case of the external market, companies rarely provide vocational training and recruit employees out of the external market; thus the government should allow employees to gain access to a job by providing them with an opportunity to develop their vocational ability. Whereas in the case of the internal market, companies train and educate employees needed for job duties; thus the government should provide financial and administrative support to encourage the activation of in-firm qualification programs.

Fourth, the qualifications of the external market should be promoted with a focus on the diverse needs of both employees and companies in order to increase the usages of qualifications. For doing so, both companies and labor unions are encouraged to participate in the operation of qualification programs. Furthermore, the government should construct a pipeline for private organizations to operate the national skills qualification system.

Fifth, the usages and outcomes of qualifications should be analyzed and evaluated on a regular basis for the further development of qualifications. The systematic construction of a DB relevant to the qualification system is also needed.

Sixth, the advancement of the usages of qualifications should coincide with investment in human resources management and the technology policies of companies. This is because if companies are to produce more value added goods, they should recruit employees with qualifications

relevant to job duties. Then, it will boost needs for vocational training and qualifications. In addition, if labor unions take more interest in the professional skills and knowledge of employees, the social status of technical human resources will be elevated and as a result, the usages of qualification will be promoted.

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